

8. (previously presented) An electron microscope as claimed in Claim 6, the electron microscope being a scanning electron microscope.

IN THE SPECIFICATION

Page 1, in the paragraph beginning on line 1, change as follows:

BACKGROUND OF THE INVENTION

The invention relates to an X-ray microscope which includes a device for generating X-rays, which device is provided with:

Page 2, in the paragraph beginning on line 10, change as follows:

SUMMARY OF THE INVENTION

It is an object of the invention to avoid said drawbacks by providing an X-ray source for comparatively soft X-rays which can operate continuously while forming no or hardly any detrimental particles in the X-ray target. This object is achieved according to the invention in that the focused radiation beam consists of a beam of electrically charged particles. The above-mentioned drawbacks are avoided by irradiating the fluid jet by means of said particles. Because of the much shorter wavelength of said particles, moreover, an advantage is obtained in that the focus formed by means of said particles can be much smaller than the focus of the beam of laser light. The invention offers an additional advantage in that the energy of the electrically charged particles can be continuously controlled in a wide range by variation of the acceleration voltage of said particles; such

control is realized by variation of the acceleration voltage of these particles.

Page 3, in the paragraph beginning on line 32, change as follows:

BRIEF DESCRIPTION OF THE DRAWING

Exemplary embodiments of the The invention will be described in detail hereinafter with reference to the Figures; corresponding elements therein are denoted by corresponding reference numerals. Therein:

Page 4, in the paragraph beginning on line 1, change as follows:

Fig. 1 shows diagrammatically some configurations of an electron beam with a fluid jet for the purpose of comparison;

Fig. 2 shows diagrammatically the beam path in a transmission X-ray microscope according to an embodiment of the invention;

Fig. 3 shows diagrammatically the beam path in a scanning transmission X-ray microscope according to an embodiment of the invention, and

Fig. 4 shows diagrammatically the beam path in a transmission X-ray microscope provided with a standard electron gun for a cathode ray tube in accordance with an embodiment of the invention.

DESCRIPTION OF EXEMPLARY EMBODIMENTS

The Figs. 1a to 1c show a number of configurations in which a fluid jet which is assumed to extend perpendicularly to the plane of drawing is irradiated by an electron beam. In Fig. 1a this

beam originates from a spot forming objective of a scanning electron microscope (SEM); in the Figs. 1 and b the electron beam originates from a standard electron gun for a cathode ray tube (CRT gun).

Page 5, in the paragraph beginning on line 15, change as follows:

In the configuration shown in Fig. 2 it is assumed that the X-ray source is formed by an X-ray electron spot 8 which itself is formed in a fluid jet 2 by an electron beam 6 which originates from a SEM system, the flow direction of said fluid jet 2 extending perpendicularly to the plane of drawing. In this case the electron spot, and hence the X-ray spot, is (much) smaller than the cross-section of the fluid jet. The X-ray beam 12 originating from the electron/X-ray spot 8 more or less uniformly irradiates the object 14 to be imaged by means of the X-ray microscope. The object 14 is situated at a distance 26 of, for example, 150 μm from the X-ray spot. X-rays are scattered by the object 14 as represented by a sub-beam 16 of scattered X-rays. Each irradiated point-shaped area of the object produces such a sub-beam. The sub-beams thus formed are incident on the objective 18 which has a typical focal distance of 1 mm and a typical diameter of 100 μm . The objective images the relevant point on the image plane 22 via the sub-beam 20. When the object distance 28 is then equal to 1.001 mm and the image distance equals 1000 mm, the magnification is 1000 x for the given focal distance of 1 mm. In order to prevent the X-ray spot 8 which irradiates through the object 14 from being imaged by the objective 18 in the space between the objective and the image plane 22, thus overexposing the image in the image plane, an X-ray absorbing shielding plate 24 is arranged at the center of the objective.